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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,300	01/23/2001	Henning Andersen	Q62611	3916
7590 03/11/2004				
Sughrue Mion Zinn Macpeak & Seas 2100 Pennsylvania Avenue N W Washington, DC 20037				
			EXAMINER	
			CHAU, COREY P	
			ART UNIT	PAPER NUMBER
			2644	

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/744,300

Applicant(s)

ANDERSEN ET AL.

Examiner

Corey P Chau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 1/23/2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01/23/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3 and 4</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On line 16, page 9, "ia" should be replaced with "is"

On line 21, page 14, "the line 17" should be replaced with "the line 18"

On line 22, page 10, "puls" should be replaced with "pulse".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 2, 10, 11, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 1 recites the limitation "the activation of generation of test signals" in line

11. There is insufficient antecedent basis for this limitation in the claim.

5. Claim 1 recites the limitation "the first position" in line 19. There is insufficient antecedent basis for this limitation in the claim.

6. Claim 1 recites the limitation "the second position" in lines 21-22. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 2 recites the limitation "the power to the hearing aid" in lines 26-27. There is insufficient antecedent basis for this limitation in the claim.

8. Claim 10 recites the limitation "the input signal" in line 17. There is insufficient antecedent basis for this limitation in the claim.
9. Claim 11 recites the limitation "the supply voltage" in line 20. There is insufficient antecedent basis for this limitation in the claim.
10. Claim 15 recites the limitation "the supply voltage" in lines 5-6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 2, 3, 4, 5, 6, 10, 12, 13, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6118877 to Lindemann et al. (hereafter as Lindemann) in view of U.S. Patent No. 5321758 to Charpentier et al (hereafter as Charpentier), and further in view of U.S. Patent No. 5012520 to Steeger.

13. Regarding Claim 1, Lindemann discloses a hearing aid with in-situ testing capability wherein the hearing aid comprises a microphone, a programmable digital signal processor (i.e. signal processor), a digital-to-analog converter, a digital input port, an analog input port, analog-to-digital converters, a receiver, and a switch (Fig. 2; column 6, lines 1-17). The hearing aid receives control signals from the hearing aid fitter

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(i.e. control device) to selectively couple either a hearing aid rehabilitator in a normal hearing aid mode or a switch to a digital-to-analog converter for using the hearing aid in a diagnostic test mode. The digital signal processor executes software programs for normal operation of the hearing aid and for diagnostic tests. The digital signal processor comprises a test tone generator and the hearing aid rehabilitator. In response to control signals from the hearing aid fitter in the diagnostic test mode, the controller commands the switch to selectively couple either the analog-to-digital converter, the test tone generator, the input port, or the memory to the controller for diagnostic testing of the hearing aid (i.e. control device being in communication with said hearing aid during the in-situ fitting for the activation of generation of test signals, which test signals are delivered to said receiver and emitted therefrom as acoustic test signals). The controller processes the digital audio signal by filtering the audio signal and adjusting amplitude of the audio signal. The digital-to-analog converter converts the digital audio signal into an analog audio signal, which is provided to the receiver (column 7, lines 18-36).

Lindemann discloses a digital signal processor of the hearing aid that receives control signals from a hearing aid fitter, but only generally; no specific hardware or software is taught. Therefore, it would have been obvious to one of ordinary skill to seek known methods for sending control signals to the digital signal processor of the hearing aid.

Steege for example discloses a hearing aid with wireless remote control to emit control signals to the hearing aid (abstract). The control signals may be to set a volume, or turn the hearing aid unit off and on (column 4, lines 15-20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize any

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known method of sending control signals to the digital signal processor of the hearing aid in order to control the functions of the hearing aid in Lindemann, such as that of Steeger. Therefore, it would have been obvious to modify the hearing aid of Lindemann with the teaching of Steeger to utilize the remote control to send control signals to the hearing aid in order to control functions of the hearing aid. Lindemann discloses gain adjustments, but only generally; no specific hardware or software is taught. Therefore it would have been obvious to one of ordinary skill to seek known methods for controlling gain in a hearing aid. Charpentier for example discloses a power efficient hearing aid comprising a final attenuator, which includes three resistors and four switches; and a final amplifier, wherein the output of the final amplifier are applied to a final attenuator. A separate bit provided by an EEPROM controls each of the switches. The amount of attenuation provided by any combination of resistors depends on the relative impedances of the combined resistors and the receiver. The output signal of the final attenuator drives the receiver, which produces sound waves in the ear of the user (column 4, lines 1-18). It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ any known method of gain adjustment for hearing aids in order to realize the needed gain control function in Lindemann, such as that of Charpentier. Therefore it would have been obvious to modify the hearing aid of Lindemann with the teaching of Charpentier to incorporate an attenuator and an amplifier (not shown in Lindemann, but clearly needed) after the digital to analog converter to provide an attenuation factor and suitable output power for a receiver (the

attenuator and the amplifier would be placed between 206 and 212 of Fig. 2 of Lindemann).

14. All elements of Claim 2 are comprehended by Claim 1. Claim 2 is rejected to reasons stated above apropos of Claim 1.

15. All elements of Claim 3 are comprehended by Claim 1. Claim 3 is rejected to reasons stated above apropos of Claim 1.

16. Regarding Claim 4, Lindemann as modified discloses a digital hearing aid (Fig. 2)

17. All elements of Claim 5 are comprehended by Claim 1. Claim 5 is rejected to reasons stated above apropos of Claim 1. Lindemann as modified using three resistors (Fig. 1-2; column 4, lines 1-2).

18. All elements of Claim 6 are comprehended by Claim 1. Claim 6 is rejected to reasons stated above apropos of Claim 1 (Fig. 2, reference 206). Lindemann discloses a D/A converter that outputs signal to the receiver.

19. All elements of Claim 10 are comprehended by Claim 1. Claim 10 is rejected to reasons stated above apropos of Claim 1.

20. Claim 12 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos of Claim 1.

21. Claim 13 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos of Claim 1.

22. Claim 14 is essentially similar to Claims 1 and 5 and is rejected for the reasons stated above apropos of Claims 1 and 5.

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23. Claim 16 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos of Claim 1.

24. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6118877 to Lindemann in view of U.S. Patent No. 5321758 to Charpentier, further in view of U.S. Patent No. 5012520 to Steeger as applied to claims 1, 2, 3, 4, 5, 6, 10, 12, 13, 14 and 16 above, and even more further in view of U.S. Patent No. 5881159 to Aceti et al (hereafter as Aceti).

25. Regarding Claim 7, Lindemann as modified discloses a digital hearing aid system comprising an amplifier, but only generally; no specific hardware or software is taught. Therefore it would have been obvious to one of ordinary skill to seek known amplifiers to send signals to the receiver. Aceti for example discloses a hearing aid comprising a class-D amplifier (i.e. switching amplifier) that is power efficient in order to extend the battery life of the hearing aid (column 2, lines 54-55). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize any known amplifier for hearing aids in order to realize the needed power efficiency in Lindemann, such as that of Aceti. Therefore, it would have been obvious to modify the hearing aid of Lindemann with the teaching of Aceti to utilize a class-D amplifier to extend the battery life of the hearing aid.

26. Claim 15 is essentially similar to Claim 7 and is rejected for the reasons stated above apropos of Claim 7.

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27. Claims 8, 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6118877 to Lindemann in view of U.S. Patent No. 5321758 to Charpentier, further in view of U.S. Patent No. 5012520 to Steeger as applied to claims 1, 2, 3, 4, 5, 6, 10, 12, 13, 14 and 16 above, and even more further in view of U.S. Patent No. 5701106 to Pikkarainen et al. (hereafter as Pikkarainen).

28. Regarding Claims 8 and 9, Lindemann as modified discloses hearing aid comprising a D/A converter, but only generally; no specific hardware or software is taught. Therefore it would have been obvious to one of ordinary skill to seek known D/A converters to send signals to the receiver. Pikkarainen for example discloses a sigma delta D/A converter wherein the advantages of a sigma delta D/A converter are high accuracy, good reliability, good stability and good linearity (column 3, lines 55-57). It would have been obvious to one having ordinary skill in the art at the time the invention to utilize any known converter in order to convert the digital signal to analog and send the signal to the receiver, such as that of Pikkarainen. Therefore, it would have been obvious to modify the hearing aid of Lindemann with the teaching of Pikkarainen to utilize a sigma delta D/A converter in order to have high accuracy, good reliability, good stability and good linearity.

29. All elements of Claim 11 are comprehended by Claim 1. Claim 11 is rejected to reasons stated above apropos of Claim 1


Conclusion

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30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Corey P Chau whose telephone number is (703)305-0683. The examiner can normally be reached on Monday - Friday 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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February 23, 2004